

# **Namics Under-fill**

## ***Qualification Report***

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## Revision History

The following table shows the revision history for this document.

Date	Version	Revision
08/24/07	1.0	Initial Xilinx release.
08/27/07	1.0.1	Typos in Table 1 and Table 2.

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# Namics Under-fill Qualification Report

## Overview

This report summarizes the reliability testing results that were obtained to qualify Namics under-fill material that will be used in SPIL's Flip-Chip package assembly.

## Qualification Objective

The objective of this qualification is to qualify Namics under-fill material for the flip-chip packages that are already in production.

## Reliability Test Conditions and Results

The qualification vehicles were selected from several different product families as well as several different package sizes and pin counts for reliability tests. [Table 1](#) provides a summary of the qualification.

Table 1: Reliability Test Conditions and Results

Test	Conditions	Test Vehicle	Lot Qty	Cum Device-Hr/Cyc	# of Failures
TC-B <sup>(1)</sup>	-55 to +125°C, 1000 cyc	XC4VLX200/FFG1513	3	102,000	0
		XC4VLX160/FFG1513	3	112,000	0
		XC4VLX25/SFG363	1	101,000	0
		XC2VP70/FFG1517	3	155,000	0
		XC2VP100/FFG1704	1	69,000	0
		XC2V8000/FFG1152	3	127,000	0
		XC2V6000/FFG1152	3	125,000	0
TC-G <sup>(1)</sup>	-40 to +125°C, 1000 cyc	XC2V6000/FFG1517	3	132,000	0
THB <sup>(1)</sup>	85°C, 85%RH, V <sub>DDMAX</sub>	XC5VLX50T/FFG1136	3	142,000	0
TH <sup>(1)</sup>	85°C, 85%RH	XC5VLX50T/FFG1136	3	142,000	0

Table 1: Reliability Test Conditions and Results (Continued)

Test	Conditions	Test Vehicle	Lot Qty	Cum Device-Hr/Cyc	# of Failures
HTS <sup>(2)</sup>	T <sub>A</sub> =150°C	XC5VLX50T/FFG1136	3	144,000	0

**Notes:**

1. Package level-4 preconditioning performed prior to THB, TH, and TC-B tests.
2. Reflow (3X) applied to HTS samples prior to the stress test.

Based on the data gathered to date, Namics under-fill has demonstrated a satisfactory result meeting qualification requirements for releasing to SPIL's production assembly.

## Qualification Data

Table 2: Qualification Data

Test	Conditions	Rel #	Device	Package	Samples	Duration	Fail Qty
TC-B <sup>(1)</sup>	-55°C/+125°C	192907	XC4VLX200	FFG1513	36	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	193007	XC4VLX200	FFG1513	35	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	193107	XC4VLX200	FFG1513	31	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	193207	XC4VLX160	FFG1513	33	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	193307	XC4VLX160	FFG1513	37	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	193407	XC4VLX160	FFG1513	42	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	204507	XC2VP70	FFG1517	47	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	204607	XC2VP70	FFG1517	50	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	204707	XC2VP70	FFG1517	58	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	204807	XC2V8000	FFG1152	43	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	204907	XC2V8000	FFG1152	44	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	205007	XC2V8000	FFG1152	40	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	205107	XC2V6000	FFG1152	43	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	205207	XC2V6000	FFG1152	38	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	205307	XC2V6000	FFG1152	44	1,000 cys	0
TC-G <sup>(1)</sup>	-40°C/+125°C	205407	XC2V6000	FFG1517	40	1,000 cys	0
TC-G <sup>(1)</sup>	-40°C/+125°C	205507	XC2V6000	FFG1517	44	1,000 cys	0

**Table 2: Qualification Data (Continued)**

Test	Conditions	Rel #	Device	Package	Samples	Duration	Fail Qty
TC-G <sup>(1)</sup>	-40°C/+125°C	205607	XC2V6000	FFG1517	48	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	212207	XC4VLX25	SFG363	101	1,000 cys	0
TC-B <sup>(1)</sup>	-55°C/+125°C	224907	XC2VP100	FFG1704	69	1,000 cys	0
THB <sup>(1)</sup>	85°C, 85%RH, Bias, V <sub>CCMAX</sub>	175707	XC5VLX50T	FFG1136	43	1,000 hrs	0
TH <sup>(1)</sup>	85°C, 85%RH	175807	XC5VLX50T	FFG1136	44	1,000 hrs	0
HTS <sup>(2)</sup>	T <sub>A</sub> = 150°C	175907	XC5VLX50T	FFG1136	45	1,000 hrs	0
THB <sup>(1)</sup>	85°C, 85%RH, Bias, V <sub>CCMAX</sub>	189307	XC5VLX50T	FFG1136	49	1,000 hrs	0
TH <sup>(1)</sup>	85°C, 85%RH	189407	XC5VLX50T	FFG1136	49	1,000 hrs	0
HTS <sup>(2)</sup>	T <sub>A</sub> = 150°C	189507	XC5VLX50T	FFG1136	50	1,000 hrs	0
THB <sup>(1)</sup>	85°C, 85%RH, Bias, V <sub>CCMAX</sub>	190607	XC5VLX50T	FFG1136	50	1,000 hrs	0
TH <sup>(1)</sup>	85°C, 85%RH	190707	XC5VLX50T	FFG1136	49	1,000 hrs	0
HTS <sup>(2)</sup>	T <sub>A</sub> = 150°C	190807	XC5VLX50T	FFG1136	49	1,000 hrs	0

**Notes:**

1. Package level-4 preconditioning performed prior to THB, TH, and TC-B tests.
2. Reflow (3X) applied to HTS samples prior to the stress test.

